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Selection and Training of Construction Foremen
in the Puget Sound Area, Washington

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of

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Master's Thesis

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CHAPTER I

Introduction

The construction foreman occupies a vital position in an organization. As the first line supervisor of a crew of workers, he is directly responsible for work accomplishment. Because of the significant role the foreman plays it is important that the right individual be selected and trained for the position.

The selection process can be a perplexing problem. There is no selection procedure that can guarantee the individual's complete success in the position. Therefore it is essential that a company have a firm idea of the type of individual who is best qualified to become a foreman. In order to accomplish this, the company must determine what personal characteristics are desired in an individual and devise some method by which potential candidates can be appraised. Additionally, the training an individual receives before and after his selection as foreman should be given strong consideration. Training must be included as part of the overall plan for the individual's personal development. When an individual is being considered for the foreman position, he should be looked upon as an investment. The emphasis should be on the individual reaching his full potential. Therefore to assist in his personal development it is important that he receive training which will enable him to become a more effective foreman.

The purpose of this study is to determine what personal characteristics are important when evaluating an individual for the position of foreman. In addition to this, the procedures utilized in the selection process will be determined. This study

will also serve to identify the value of a training program for foremen and to identify training topics of importance.

It should be emphasized that this study will deal with an individual's initial selection as foreman and does not pertain to the selection of an experienced foreman for a particular project.

Information gathered in this study was obtained from general contractors who are members of the Associated General Contractors of Seattle, Washington and electrical and mechanical contractors who are members of the Northwest Construction Council of Seattle, Washington.

Extensive research has been undertaken and a great deal has been written about the foreman in industry. Most of this work has concentrated on the manufacturing industries, however, in recent years much effort has been directed towards the foreman in the construction industry. Furthermore much of what has been learned from the manufacturing industries can be applied to the construction industry. Much of this research has been accomplished by behavioral scientists and industrial engineers and has revealed a great deal about the human nature of foremen.

Many writers feel that the foreman has been largely neglected and little importance has been given to his position (33, 34, 35, 39). As a result of this, the foreman has been placed in a position of leadership but has been given inadequate authority to effectively accomplish his job (43). However, several companies have reported that much of their success is attributable to their foremen (12, 17, 38, 45, 46). Therefore, it would seem that much

is to be gained from proper recognition of the foreman's position and the authority that should be attached to it. So, it would appear that selection should be given careful consideration.

Selection has been described as an inexact science (2) and therefore it is important that a company formulate a job description for screening potential candidates (2, 4, 11, 12, 13, 18). In the past, the primary criteria for foreman selection was that the individual be the best worker in the crew (13). However, it has been noted that the individual who is the best worker does not always make the best foreman because he continues working after becoming foreman and his crew often ends up watching him do the work (13, 16). In view of this, it is therefore necessary that an individual possess a number of traits or characteristics which interact and thereby enable him to be an effective supervisor.

The importance of the individual's transition period as he progresses from worker to supervisor has been well documented. It should not be expected that the new foreman will be an immediate success (3). It must be recognized that the transition period is difficult and that the new foreman needs support from his superiors and needs time to adjust (12, 13). The benefits of training as well as its pitfalls have received much attention as regards its value to the individual as he advances from worker to supervisor.

A great deal of literature is available which documents the need for training foremen (2, 3, 4, 24, 31) and the various programs that have been used in industry (2, 9, 10, 25, 45, 47).

However, one major problem has been identified. Much criticism has been directed at training programs which are broad and general (8,10,15). Therefore, in the development of training programs, consideration must be given to the particular type of work performed and the nature of the working environment (21). This is particularly true in construction where work is seasonal, labor requirements often change on a daily or weekly basis, and work is performed in both the private and public sector. An additional problem in the construction industry is that the foreman is most often a union member, resulting in divided loyalty between his union and the company for whom he works (23). The training programs that have achieved the greatest success are those that addressed specific problems frequently encountered by program participants (8,10,15).

The advantages associated with in-house training programs have been affirmed (47). However, certain caution must be observed with this type of program. It has been determined that the inherent disadvantages of in-house programs are: a) participants are inhibited because of personalities involved, and b) participants are skeptical of management personnel who seem to promote the company line (10).

In order to derive the greatest benefits from training, it should be looked upon as a continuous program as opposed to the traditional approach which is to provide training only when it is needed (36). In this way supervisors are developed and their capabilities and limitations are well known (3,36). Furthermore, the uncertainty associated with accepting a supervisor sight

unseen from another company or the union hall is eliminated (2, 4).

In summary, given the importance of the foreman as a first-line supervisor it is necessary to thoughtfully and carefully consider the method by which individuals are evaluated and selected for the foreman position. Furthermore, the training that an individual receives as he proceeds from worker to foreman should be given strong consideration in view of the potential advantages to be realized. Recognition of the pitfalls associated with certain types of programs should assist in the development of programs which are more successful.

CHAPTER II

The Survey Questionnaire

The purpose of the questionnaire was to collect information on the selection and training of construction foremen. The questionnaire (see Appendix A) was mailed in early June to 173 general contractors, 18 electrical contractors, and 14 mechanical contractors for a grand total of 205. The questionnaires were completed and returned by 83 general contractors, 10 electrical contractors, and 7 mechanical contractors for a total of 100 returned. This represents a return from 48 percent of the general contractors, 56 percent of the electrical contractors, and 50 percent of the mechanical contractors for an overall return of 49 percent.

Contractors were asked to indicate the type of contracting business in which they are engaged, the average number of employees during the year and the individuals completing the questionnaire were asked to indicate their position in the company. This information was requested so that comparisons could be made on the basis of contracting specialty and size of firm. The overwhelming majority of questionnaires were completed by presidents and owners, so no attempt will be made in this study to compare responses on the basis of position occupied in the company.

The questionnaire contained a list of eighteen characteristics (see Appendix A: Quest.4) and contractors were asked to rank them in order of importance. A brief definition was provided for purposes of clarification. Space was provided at the end of the list to add other characteristics considered important by contractors. The original list was prepared in order to facilitate

completion of the questionnaire and is not considered to be all-inclusive. Many of the questionnaires returned contained a rating for each characteristic and characteristics were often given equal ratings. For the purpose of analyzing the data an average score will be calculated for each characteristic in order to determine the relative order of importance. In addition, the number of times a characteristic was ranked or rated one will be shown. The list of characteristics will be presented based upon the size of the company and the contracting business in which engaged.

Contractors were asked if they had an established procedure for selecting foremen and if so, were asked to indicate the procedure utilized (see Appendix A: Quest. 5). Many of the contractors who completed the questionnaire indicated that they did not have an established procedure, however, did check one or more of the procedures utilized. In the compilation and presentation of data, the input from all respondents will be utilized to determine the procedures most frequently employed.

Contractors were then asked to indicate if they had encountered individuals who had no desire to become foreman and list reasons, if known. The final question on selection asked contractors to indicate the number of years of experience an individual should have prior to being selected as a foreman.

To gather information on training, contractors were asked if they provided indoctrination training for new employees and if so to describe briefly. Contractors were then asked to indicate their feelings on the value of a training program for newly-selected foreman. A list of training topics (see Appendix A: Quest. 10) was provided and contractors were asked to rank them in order of

importance. Some respondents actually rated the topics and some topics were given equal rating. In the analysis of data an average score will be determined for each topic in order to determine the relative order of importance. Many contractors who responded negatively to a training program for newly-selected foremen did provide a ranking or rating for the training topics. In the compilation and presentation of data, input will be utilized from all contractors who responded to the question.

Finally, space was provided at the end of the questionnaire for the purpose of soliciting comments on selection and training of construction foremen. Selected comments will be presented in the text of the thesis.

Presentation of data in this thesis based upon company size will be shown for small, medium and large companies. Small firms are those having 25 employees or less, medium firms are those having 26 to 100 employees, and large firms are those having over 100 employees. This division is arbitrary and was made to facilitate the presentation of data.

Material presented in this thesis represents only those contractors responding to the survey and is not considered to be reflective of those contractors who did not respond.

CHAPTER III

Foreman Selection

The following tables contain the compilation for general, electrical and mechanical contractors responding to the survey. The data was compiled from questions one through seven of the survey questionnaire (see Appendix A).

General Electrical and Mechanical Contractors

Table 3-1 contains the number of contractors responding to the survey. The grouping of contractors into small, medium and large companies is based on the number of employees as shown in Table 3-1. This grouping is arbitrary and was made to facilitate the presentation of data.

Table 3-1 Contractors Responding to the Survey

Type of Contractor	S I Z E O F C O M P A N Y			TOTAL
	Small (25 or less employees)	Medium (26 to 100 employees)	Large (100 or more employees)	
GENERAL	27	33	23	83
ELECTRICAL	5	3	2	10
MECHANICAL	2	2	3	7

Personal Characteristics

The survey questionnaire contained a list of 18 personal characteristics that might be considered when evaluating an individual for the foreman position. Contractors were asked to rank them in

order of importance. Many contractors rated these characteristics vice ranking them. In order to determine the relative order of importance for the characteristics an average score was computed for each one. This score was computed by totaling the ranks and ratings assigned and dividing by the number of contractors who ranked or rated the characteristic. Data from questionnaires in which contractors merely indicated that all characteristics are important was not used in computing the average score. Then, using the average scores, the characteristics were ranked in order of importance by giving the highest ranking to the characteristic with the lowest average score, the second highest ranking to the characteristic with the next lowest average score, etc. In addition, the number of times a characteristic was ranked or rated as number one was calculated.

Tables 3-2 through 3-13 present the relative ranking of personal characteristics by general, electrical and mechanical contractors. These tables were prepared to determine if differences exist in personal characteristics considered by general, electrical and mechanical contractors. These tables will also be used to determine if characteristics considered varies with size of company.

In Tables 3-2 through 3-13, both the average score and times ranked or rated as number one are shown for each characteristic.

Table 3-14 shows the relative ranking of personal characteristics by general, electrical and mechanical contractors. The characteristics are listed alphabetically.

Table 3-2 Rank Order of Personal Characteristics Considered by
Small General Contracting Companies When Selecting
 Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Character	2.6	14
2	Judgement	2.8	12
3	Cooperation	2.9	8
4	Reliability	3.0	14
5	Intelligence	3.2	11
6	Technical Skill	3.4	13
7	Human Relations	3.9	7
8	Imagination	4.1	8
9	Adaptability	4.3	8
10	Decisiveness	4.4	6
11	Initiative	4.5	11
12	Industry	4.7	9
13	Self-Confidence	5.2	4
14	Experience	6.2	2
14	Self-Expression (Oral)	6.2	3
16	Personal Appearance	6.9	1
17	Self-Expression (Written)	7.6	0
18	Education	9.2	0

Table 3-3 Rank Order of Personal Characteristics Considered by
Medium Size General Contracting Companies When Selecting
 Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Reliability	2.6	20
2	Initiative	2.7	17
3	Industry	3.3	11
3	Cooperation	3.3	14
3	Decisiveness	3.3	9
6	Human Relations	3.4	14
6	Technical Skill	3.4	14
6	Judgement	3.4	13
9	Imagination	3.6	10
10	Character	3.8	12
10	Intelligence	3.8	11
12	Self-Confidence	4.2	9
13	Adaptability	4.9	8
14	Experience	5.3	4
15	Personal Appearance	6.3	1
16	Self-Expression (Oral)	6.4	1
17	Self-Expression (Written)	7.3	1
18	Education	7.6	0

Table 3-4 Rank Order of Personal Characteristics Considered by
Large General Contracting Companies When Selecting
 Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Reliability	2.0	13
2	Judgement	2.2	10
3	Character	2.9	8
3	Intelligence	2.9	7
5	Technical Skill	3.0	7
6	Cooperation	3.1	8
7	Human Relations	3.8	5
8	Initiative	3.9	9
9	Adaptability	4.2	5
9	Industry	4.2	8
11	Imagination	4.4	3
12	Self-Confidence	4.7	4
13	Decisiveness	4.8	1
14	Experience	4.9	3
15	Self Expression (Oral)	5.6	1
16	Personal Appearance	6.4	0
17	Self-Expression (Written)	6.7	1
18	Education	7.6	0

Table 3-5 Rank Order of Personal Characteristics Considered by
All General Contracting Companies When Selecting
 Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Reliability	2.5	47
2	Judgement	2.9	35
3	Cooperation	3.1	30
4	Character	3.2	34
5	Technical Skill	3.3	34
6	Intelligence	3.4	29
7	Initiative	3.6	37
7	Human Relations	3.6	26
9	Decisiveness	4.0	16
9	Imagination	4.0	21
9	Industry	4.0	28
12	Adaptability	4.5	21
13	Self-Confidence	4.6	17
14	Experience	5.5	9
15	Self-Expression (Oral)	6.1	5
16	Personal Appearance	6.5	2
17	Self-Expression (Written)	7.2	2
18	Education	8.1	0

Table 3-6 Rank Order of Personal Characteristics Considered by
Small Electrical Contracting Companies When Selecting
 Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Judgement	2.3	2
2	Reliability	3.3	1
3	Initiative	4.0	1
4	Character	4.4	2
5	Technical Skill	4.8	2
6	Intelligence	5.0	0
7	Cooperation	5.2	1
8	Decisiveness	5.5	1
9	Human Relations	5.8	1
10	Imagination	7.6	0
11	Industry	8.0	0
12	Adaptability	10.0	0
13	Personal Appearance	10.2	0
14	Experience	10.4	0
15	Self-Confidence	10.5	0
16	Education	10.6	0
17	Self-Expression (Oral)	11.0	0
18	Self-Expression (Written)	11.2	0

Table 3-7 Rank Order of Personal Characteristics Considered by
Medium Size Electrical Contracting Companies When
 Selecting Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Technical Skill	1.0	3
2	Judgement	1.7	1
2	Decisiveness	1.7	2
4	Initiative	2.7	2
4	Human Relations	2.7	1
6	Reliability	3.0	2
7	Cooperation	3.7	1
7	Character	3.7	2
9	Industry	4.3	2
10	Imagination	4.7	1
10	Intelligence	4.7	2
12	Self-Confidence	5.0	2
13	Adaptability	5.7	1
14	Experience	6.3	1
14	Self-Expression (Oral)	6.3	1
16	Personal Appearance	7.0	0
17	Self-Expression (Written)	8.0	0
18	Education	8.7	0

Table 3-8 Rank Order of Personal Characteristics Considered by
Large Electrical Contracting Companies When Selecting
 Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Intelligence	2.0	1
1	Judgement	2.0	1
1	Industry	2.0	0
4	Initiative	2.5	1
5	Character	4.0	1
6	Reliability	4.3	0
7	Personal Appearance	5.0	0
7	Decisiveness	5.0	0
9	Human Relations	5.5	0
9	Imagination	5.5	1
11	Technical Skill	6.5	1
12	Self-Expression (Oral)	6.8	0
13	Self-Confidence	7.5	0
14	Cooperation	8.5	0
15	Self-Expression (Written)	9.0	0
16	Adaptability	9.5	0
17	Experience	10.5	0
18	Education	11.5	0

Table 3-9 Rank Order Personal Characteristics Considered by All
Electrical Contracting Companies When Selecting Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Judgement	1.8	4
2	Reliability	3.0	3
3	Initiative	3.3	4
4	Decisiveness	3.6	3
5	Technical Skill	4.0	6
6	Character	4.1	5
7	Intelligence	4.3	3
8	Human Relations	4.8	2
9	Cooperation	5.4	2
10	Industry	5.7	2
11	Imagination	6.3	2
12	Self-Confidence	7.2	2
13	Personal Appearance	8.2	0
14	Adaptability	8.6	1
15	Self-Expression (Oral)	8.8	1
16	Experience	9.2	1
17	Self-Expression (Written)	9.8	0
18	Education	10.2	0

Table 3-10 Rank Order of Personal Characteristics Considered
by Small Mechanical Contracting Companies When
Selecting Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Reliability	1.0	2
2	Industry	3.5	0
3	Human Relations	4.0	0
4	Cooperation	5.0	0
4	Character	5.0	0
6	Adaptability	6.0	0
7	Initiative	6.5	1
7	Intelligence	6.5	0
9	Imagination	7.5	0
10	Judgement	8.5	0
11	Decisiveness	9.5	0
12	Self-Confidence	10.5	0
13	Technical Skill	12.5	0
14	Self-Expression (Oral)	13.0	0
15	Self-Expression (Written)	15.0	0
15	Experience	15.0	0
17	Education	16.0	0
Not Ranked	Personal Appearance	0	0

Table 3-11 Rank Order of Personal Characteristics Considered
by Medium Size Mechanical Contracting Companies
When Selecting Foremen.

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Industry	1.0	2
1	Initiative	1.0	2
3	Decisiveness	1.5	1
3	Intelligence	1.5	1
5	Cooperation	2.0	1
6	Character	2.5	1
6	Technical Skill	2.5	0
6	Judgement	2.5	0
9	Reliability	3.0	0
9	Self-Confidence	3.0	0
11	Education	3.5	0
12	Imagination	4.0	0
12	Human Relations	4.0	1
12	Adaptability	4.0	0
15	Self-Expression (Oral)	4.5	0
16	Experience	5.0	0
17	Personal Experience	6.0	0
18	Self-Expression (Written)	6.5	0

Table 3-12 Rank Order of Personal Characteristics Considered
by Large Mechanical Contracting Companies When
Selecting Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Reliability	2.0	1
1	Technical Skill	2.0	2
3	Initiative	2.3	1
4	Intelligence	3.3	0
5	Judgement	6.0	1
5	Adaptability	6.0	0
7	Cooperation	7.3	0
7	Human Relations	7.3	0
9	Decisiveness	7.7	0
9	Imagination	7.7	0
11	Industry	8.3	0
12	Experience	8.7	0
13	Self-Confidence	9.0	0
14	Self-Expression (Oral)	10.0	0
14	Education	10.0	0
14	Character	10.0	0
17	Personal Appearance	10.7	0
17	Self-Expression (Written)	10.7	0

Table 3-13 Rank Order of Personal Characteristics Considered
by All Mechanical Contracting Companies When
Selecting Foremen

Rank	Personal Characteristics	Average Score	Number of Times Ranked or Rated 1
1	Reliability	2.0	3
2	Initiative	3.1	4
3	Intelligence	3.7	1
4	Industry	4.9	2
5	Technical Skill	5.1	2
5	Cooperation	5.1	1
7	Adaptability	5.4	0
7	Human Relations	5.4	1
9	Judgement	5.7	1
10	Decisiveness	6.4	1
10	Character	6.4	1
12	Imagination	6.6	0
13	Self-Confidence	8.0	0
14	Personal Appearance	8.8	0
15	Self-Expression (Oral)	9.3	0
16	Experience	9.4	0
17	Education	9.9	0
18	Self-Expression (Written)		

Table 3-14 Relative Ranking of Personal Characteristics Considered by General, Electrical and Mechanical Contractors in Foremen Selection

Personal Characteristics	Relative Rank											
	General				Electrical				Mechanical			
	S	M	L	O	S	M	L	O	S	M	L	O
Adaptability	9	13	9	12	12	13	16	14	6	12	5	7
Character	1	10	3	4	4	7	5	6	4	6	14	10
Cooperation	3	3	6	3	7	7	14	9	4	5	7	5
Decisiveness	10	3	13	9	8	2	7	4	11	3	9	10
Education	18	18	18	18	16	18	18	18	17	11	14	16
Experience	14	14	14	14	14	14	17	16	15	16	12	17
Human Relations	7	6	7	7	9	4	9	8	3	12	7	7
Imagination	8	9	11	9	10	10	9	11	9	12	9	12
Industry	12	3	9	9	11	9	1	10	2	1	11	4
Initiative	11	2	8	7	3	4	4	3	7	1	3	2
Intelligence	5	10	3	6	6	10	1	7	7	3	4	3
Judgement	2	6	2	2	1	2	1	1	10	6	5	9
Personal Appearance	16	15	16	15	13	16	7	13	*	17	17	14
Reliability	4	1	1	1	2	6	6	2	1	9	1	1
Self-Confidence	13	12	12	13	15	12	13	12	12	9	13	13
Self-Expression (Oral)	14	15	15	15	17	14	12	15	14	15	14	15
Self-Expression (Written)	17	17	17	17	18	17	15	17	15	18	17	18
Technical Skill	6	6	5	5	5	1	11	5	13	6	1	5

S=Small, M=Medium, L=Large, O=Overall

*Not Ranked

Additional Personal Characteristics

Table 3-15 contains additional personal characteristics considered by contractors when selecting foremen. The number of contractors listing each characteristic is shown in the table.

Table 3-15 Additional Personal Characteristics Considered by Contractors When Selecting Foremen

Personal Characteristic	Number of Contractors											
	General				Electrical				Mechanical			
	S	M	L	T	S	M	L	T	S	M	L	T
Loyalty	0	2	1	3								
Cost Conscious	0	1	1	2			L		0	0	1	1
Honesty	0	2	0	2		N	I					
Dedication	0	0	1	1		O	S					
Desire to Organize & Initiate Job	1	0	0	1		T	T					
Foresight	0	0	1	1			E					
Leadership	0	1	0	1			D					
Productive	0	0	1	1								
Schedule Oriented									0	0	1	1

S=Small, M=Medium, L=Large, T=Total

Selection Procedure

Table 3-16 presents the response given by contractors when asked if their companies had an established procedure for selecting foremen.

Table 3-16 Contractors Use of an Established Procedure For
Selecting Foremen

Contractors	Size of Company						Overall	
	Small		Medium		Large			
	Percentage		Percentage		Percentage		Percentage	
	Yes	No	Yes	No	Yes	No	Yes	No
General	44	56	42	58	83	17	54	46
Electrical	40	60	67	33	50	50	50	50
Mechanical	50	50	100	0	67	33	71	29

Table 3-17 presents the response given by contractors when asked to indicate the selection procedure used. In addition, other procedures added by contractors are listed in the table.

Table 3-17 Procedures Utilized by Contractors For Selecting Foremen

Selection Procedures	Number of Contractors											
	General				Electrical				Mechanical			
	S	M	L	T	S	M	L	T	S	M	L	T
Personal Interview	8	12	12	32	0	2	1	3	0	1	2	3
Years with Company	6	6	7	19	0	0	0	0	1	2	0	3
Recommendation	7	8	6	21	1	1	0	2	0	1	2	3
Field Observation	12	13	15	40	1	1	1	3	1	2	0	3
Probationary Period	4	6	5	15	0	0	0	0	0	0	0	0
Others: Union	1	0	1	2	N C N E L I S T E D							
Desire	0	1	0	1								
Superintendent	0	0	1	1								

Table 3-18 presents the response given by contractors when asked how many years of experience an individual should have before he is ready to become a foreman. Several contractors indicated that this was a difficult question to answer since experience really depends upon the individual. The years of experience listed in the table best represent the minimum years of experience indicated in the questionnaires.

Table 3-18 Minimum Years of Experience Desirable in Foremen Candidates

Years of Experience	Number of Contractors											
	General				Electrical				Mechanical			
	S	M	L	T	S	M	L	T	S	M	L	T
1	0	3	1	4	1	0	0	1				
2	2	1	2	5								
3	2	2	2	6					1	0	0	1
4	4	6	3	13								
5	8	11	5	24	4	1	1	6	1	2	1	4
6	3	0	1	4	0	2	1	3				
7	1	0	0	1								
8	1	2	0	3					0	0	2	2
9												
10												

S=Small, M=Medium, L=Large, T=Total

Comments

The following comments were selected from those given by contractors responding to the survey.

The owner of a small company, "Be sure he's working for the company—not the union."

The president of a medium size Company: "I consider attitude the greatest single factor in a man's qualifications for the position of foreman."

The president and owner of a small company: "We prefer to

bring up people through our own ranks to this position over a period of time so that our procedures and working relationships are well developed between us."

The executive vice president of a large company: "Foremen aren't selected. They attract attention by leadership and performance. We merely polish the instinctive talent by coaching."

The secretary-treasurer of a medium size company: "The best foreman is the individual interested in and dedicated to the work and has been active to some degree in construction since he was in his teens or has worked with a relative."

The president of a medium size company: "Foremen are pushers—they don't need to be highly skilled or experienced if they are natural leaders and are well liked by the other men."

Chairman of the Board of a large company: "He must be honest with himself and his employer—all the rest will fall in line."

An engineer from a medium size company: "It takes a different kind of an individual for different kinds of work. We need an individual for public work quite different from what we require for private work where customer relations are important."

President of a small company: "Years of experience are not a good indicator. It depends entirely upon the complexity of the job and the individual being considered."

Vice-president of a large company, "Our foremen are selected from union recommendations, as the hall supplies the man orders we send in."

The vice-president of a small company, "Some men are ready right now to be foreman qualified. Some are never ready."

The president of a small company, "A foreman should have the willingness to represent management even if the union puts pressure on him to the contrary."

The owner of a medium size company, "To be a good foreman you have to have three things: Know your trade, Be aggressive and Be Liked and respected by people. If you don't have one of these— You won't make it."

Workers Who Show No Interest in Becoming Foremen

Contractors were asked in the questionnaire if they had encountered individuals who had no desire to become foremen and if so to indicate the individuals' reasons if known.

Table 3-19 presents the response given by general, electrical and mechanical contractors. The three types of contractors are grouped together because there were no distinctive differences in their responses to this question. In compiling this information, key words were identified in the various responses and were grouped as shown in the table. The number of contractors who indicated each response is shown also.

Table 3-19 Reasons Indicated by General, Electrical and Mechanical Contractors Why Workers Do Not Want to Become Foremen

Reasons that Individuals Do Not Want to Become Foremen	No. of Contractors Indicating Reasons
Do not want the responsibility	65
Too much pressure with the job	9
Wage differential not adequate to compensate for added responsibility	9
Lack of ambition	7
Do not want to direct others	7
Lack of self-confidence	6
Do not want to devote added time to organize job, paperwork, etc.	6
Do not have the authority needed because of regulations such as union and WISHA	3

Table 3-19 (continued)

Reasons that Individuals Do Not Want to Become Foremen(continued)	No. of Contractors Indicating Reasons
Have outside interests such as sports and recreation	3
Content with their present job	3

CHAPTER IV

Training for Newly Selected Foremen

The following tables contain the compilation of data from the survey questionnaires returned by general, electrical and mechanical contractors. The data was compiled from questions eight through ten of the survey questionnaire (see Appendix A).

General, Electrical and Mechanical Contractors

Table 4-1 contains the number of contractors responding to the survey. The grouping of contractors into small, medium and large companies is based on the number of employees as shown in the table. This grouping is arbitrary and was made to facilitate the presentation of data.

Table 4-1 Contractors Responding to the Survey

Type of Contractor	S I Z E O F C O M P A N Y			TOTAL
	Small (25 or less employees)	Medium (26 to 100 employees)	Large (100 or more employees)	
GENERAL	27	33	23	83
ELECTRICAL	5	3	2	10
MECHANICAL	2	2	3	7

Indoctrination Training

Contractors were asked if they provided indoctrination training for newly selected foremen. Their response is presented in Table 4-2.

Table 4-2 Contractors Providing Indoctrination Training
For New Foremen

Contractors	S I Z E O F C O M P A N Y						Overall	
	Small		Medium		Large			
	Percentage		Percentage		Percentage		Percentage	
	Yes	No	Yes	No	Yes	No	Yes	No
General	52	48	52	48	70	30	57	43
Electrical	60	40	67	33	0	100	50	50
Mechanical	100	0	100	0	100	0	100	0

Contractors were asked to provide a brief description of their indoctrination training for new foremen. The following is a summary of responses received.

Several companies provide a detailed briefing on safety, cost controls, time keeping, equal employment opportunity, reports, job organization and performance. Some companies hold weekly or periodic meetings for all foremen at which policy and procedure are discussed. Some companies indicated that company operation and organization manuals were used for indoctrination. One company indicated that it provides new foremen with a supervisor's manual. Three companies have sent new foremen to cost improvement courses, safety courses and courses on CPM. One company indicated that it briefed new foremen on company history and what they do and do not stand for. Several companies use the following people to indoctrinate new foremen: project

managers, construction managers, field superintendents, estimators and accountants. Some companies indicated that indoctrination was accomplished by the president or owner. Some companies use experienced foremen to indoctrinate new foremen through on-the-job-training for short periods. Companies that bring their foremen up through the ranks provide continuous indoctrination training. One company indicated that it had a formalized training period for new foremen. Finally, one company described their indoctrination training as an initial meeting with the owner and superintendent and follow-up meetings with the new foreman, the job superintendent and accountant.

Training Program

Contractors were asked if a training program would be valuable for newly selected foremen. Their response is contained in Table 4-3.

Table 4-3 Contractors Response to the Value of a Training Program for New Foremen

	S I Z E O F C O M P A N Y						Overall	
	Small		Medium		Large			
	Percentage		Percentage		Percentage		Percentage	
	Yes	No	Yes	No	Yes	No	Yes	No
Contractors								
General	67	33	70	30	74	26	70	30
Electrical	20	80	33	67	100	0	40	60
Mechanical	0	100	100	0	100	0	71	29

The survey questionnaire listed seven training topics and contractors were asked to rank them in order of importance. Some

contractors rated these topics vice ranking them and topics were often given an equal rank or rating. In order to determine the relative order of importance an average score was computed for each topic. This score was computed by totaling the ranks and ratings assigned and dividing by the number of general contractors who ranked or rated the topic. Data from questionnaires in which contractors merely indicated that all topics are important was not used in computing the average score. Using the average score, the topics were ranked in order of importance by giving the highest ranking to the topic with the lowest average score, the second highest ranking to the topic with the next lowest average score, etc. Additionally, the number of times a characteristic was ranked or rated as number one was calculated.

Tables 4-4 through 4-15 present the relative ranking of training topics by general, electrical and mechanical contractors. These tables were prepared to determine if differences exist in topics considered important by general, electrical and mechanical contractors. In addition, these tables will be used to determine if the importance of topics varies with company size. Both the average score and the number of times ranked or rated as number one are shown for each topic in Tables 4-4 through 4-15.

Table 4-16 is a summary of topic ranks by general, electrical and mechanical contractors.

Table 4-4 Rank Order of Foremen Training Topics for Small
General Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Construction Methods & Productivity Improvement	2.6	7
2	Supervisory Training	2.8	13
2	Quality Control	2.8	7
4	Safety	2.9	8
5	Cost & Labor Reporting	3.1	4
6	Work Scheduling	3.7	4
7	Labor Relations	4.0	1

Table 4-5 Rank Order of Foremen Training Topics for Medium Size
General Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Supervisory Training	2.1	17
2	Safety	2.4	16
3	Work Scheduling	2.6	3
4	Construction Methods & Productivity Improvement	2.7	7
5	Quality Control	2.8	11
5	Cost & Labor Reporting	2.8	11
7	Labor Relations	3.7	5

Table 4-6 Rank Order of Foremen Training Topics by Large
General Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Work Scheduling	2.3	5
2	Supervisory Training	2.5	11
3	Construction Methods & Productivity Improvement	2.8	6
4	Safety	3.3	7
5	Quality Control	3.9	2
6	Cost & Labor Reporting	4.0	5
7	Labor Relations	4.8	0

Table 4-7 Rank Order of Foremen Training Topics by All
General Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Supervisory Training	2.4	41
2	Construction Methods & Productivity Improvement	2.7	20
3	Work Scheduling	2.8	12
3	Safety	2.8	31
5	Quality Control	3.1	20
6	Cost & Labor Reporting	3.2	19
7	Labor Relations	4.1	6

Table 4-8 Rank Order of Foremen Training Topics by Small
Electrical Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Supervisory	2.4	1
2	Work Scheduling	2.8	2
3	Construction Methods & Productivity Improvement	3.2	1
4	Labor Relations	3.4	0
5	Quality Control	4.2	0
5	Cost & Labor Reporting	4.2	0
7	Safety	4.8	0

Table 4-9 Rank Order of Foremen Training Topics by Medium Size
Electrical Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Work Scheduling	1.0	3
2	Construction Methods & Productivity Improvement	1.7	1
3	Labor Relations	2.3	0
3	Safety	2.3	2
5	Supervisory Training	3.0	1
6	Cost & Labor Reporting	3.3	1
6	Quality Control	3.3	1

Table 4-10 Rank Order of Foremen Training Topics by Large
Electrical Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Supervisory Training	1.8	1
2	Work Scheduling	2.0	1
3	Cost & Labor Reporting	3.3	0
4	Construction Methods & Productivity Improvement	3.5	0
5	Labor Relations	4.5	0
6	Safety	5.0	0
7	Quality Control	6.0	0

Table 4-11 Rank Order of Foremen Training Topics by All
Electrical Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Work Scheduling	2.1	6
2	Supervisory Training	2.5	3
3	Construction Methods & Productivity Improvement	2.8	2
4	Labor Relations	3.3	0
5	Cost & Labor Reporting	3.8	1
6	Safety	4.1	2
7	Quality Control	4.3	1

Table 4-12 Rank Order of Foremen Training Topics by Small
Mechanical Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Work Scheduling	2.5	0
1	Construction Methods & Productivity Improvement	2.5	0
3	Supervisory	3.0	1
3	Safety	3.0	1
5	Quality Control	4.0	0
6	Cost & Labor Reporting	6.5	0
6	Labor Relations	6.5	0

Table 4-13 Rank Order of Foremen Training Topics by Medium Size
Mechanical Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Supervisory	1.0	2
2	Work Scheduling	4.0	0
2	Cost & Labor Reporting	4.0	0
2	Safety	4.0	0
5	Construction Methods & Productivity Improvement	4.5	0
6	Quality Control	5.0	0
7	Labor Relations	5.5	0

Table 4-14 Rank Order of Foremen Training Topics by Large
Mechanical Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Construction Methods & Productivity Improvement	1.3	2
2	Work Scheduling	2.3	1
2	Cost & Labor Reporting	2.3	1
4	Supervisory Training	4.0	0
4	Labor Relations	4.0	0
6	Quality Control	4.3	0
7	Safety	5.3	0

Table 4-15 Rank Order of Foremen Training Topics by All
Mechanical Contracting Companies

Rank	Training Topics	Average Score	Number of Times Ranked or Rated 1
1	Construction Methods & Productivity Improvement	2.6	2
2	Supervisory Training	2.9	3
2	Work Scheduling	2.9	3
4	Cost & Labor Relations	4.0	1
5	Safety	4.3	1
6	Quality Control	4.4	0
7	Labor Relations	5.1	0

Table 4-16 Relative Ranking of Foremen Training Topics by
General, Electrical and Mechanical Contractors

Training Topics	R E L A T I V E R A N K											
	General				Electrical				Mechanical			
	S	M	L	O	S	M	L	O	S	M	L	O
Supervisory Training	2	1	2	1	1	5	1	2	3	1	4	2
Work Scheduling	6	3	1	3	2	1	2	1	1	2	2	2
Construction Methods & Productivity Improvement	1	4	3	2	3	2	4	3	1	5	1	1
Cost & Labor Reporting	5	5	6	6	5	6	3	4	6	2	2	4
Quality Control	2	5	5	5	5	6	7	7	5	6	6	6
Safety	4	2	4	3	7	3	6	6	3	2	7	5
Labor Relations	7	7	7	7	4	3	5	4	6	7	4	7

S=Small, M=Medium, L=Large, O=Overall

Comments

The following comments on training were selected from those given by contractors responding to the survey.

The owner of a small company, "Usually a new foreman has had on-the-job-training of the various duties and responsibilities prior to becoming a foreman. A training program would not be valuable."

The owner of a large company, "A training program would not be valuable for new foremen—a person grows into it."

The owner of a medium size company, "A training program would be valuable. Every good employee, or employer for that matter, should have—Steam in the Boiler—Goals and Purposes in Mind!"

The vice president of a large company, "Leadership and experience are the two factors looked at most and these factors cannot be trained into an individual."

The owner of a small company, "Oddly enough very few tradesmen have a desire to become foremen, they just do not want the responsibility, however, possibly the right training program could change this pattern."

The president of a small company, "One problem is keeping foremen continuously employed—therefore it is difficult to justify any great expense in training unless the man is exceptional—a basic problem in our industry."

The president of a small company, "The foreman's primary job is to get things done for the superintendent. Through experience he learns how a building goes together and what makes up a construction crew."

The president of a small company, "Labor relations is not a valid topic for training foremen."

The president of a small company, "An individual should not be made to feel he lacks the ability to manage and needs training to accomplish it."

Field engineer from a small company, "A training program would not be valuable for a company as small as ours."

CHAPTER V

Conclusions and Recommendations

Survey Questionnaire

A survey questionnaire has both advantages and disadvantages. Its major advantage is that it is a rapid method of gathering information. Its major disadvantage is that questions may have an entirely different meaning to the responder than the preparer. Despite its limitations, it still serves as an effective means of collecting data.

In retrospect, questions asking contractors to rank personal characteristics and training topics would have been better if a rating system had been used. For example, a qualitative rating of very important, important and little or no importance matched with a numerical rating of one, two and three would have simplified answering the questions and would have allowed data to be more easily compiled.

Foremen Selection

Since contractors were provided with a predetermined list of personal characteristics, it is difficult to ascertain that these characteristics are in fact considered in foremen selection. Additionally, when selecting foremen, desirable characteristics would be identified, but it is highly unlikely that they would be ranked in any order of importance.

Ranking personal characteristics, as was done in this study provides an indication of their relative importance to contractors. Examination of relative importance reveals that personal

characteristics fall into three groups.

Certain characteristics, such as education and experience, are considered to be of little or no importance by all contractors. Three characteristics, reliability, technical skill and human relations, have each been given the same relative importance by general, electrical and mechanical contractors, on an overall basis. These three are common characteristics considered in foremen selection. Several characteristics, such as intelligence and initiative, have considerable variation in importance among contractors.

The three groups of characteristics are shown in Table 5-1.

Table 5-1 Relative Importance of Personal Characteristics Considered in Foremen Selection

Common Characteristics Considered in Foremen Selection	Characteristics Having Varying Importance
Reliability Technical Skill Human Relations	Judgement Cooperation Character Intelligence Decisiveness Imagination Industry Adaptability
Characteristics Given Little or No Importance	
Education Experience Self Confidence Personal Appearance Self-Expression (Oral) Self-Expression (Written)	

Reliability, technical skill and human relations represent the basic characteristics contractors look for when selecting

foremen. In addition to the basic characteristics, contractors look for other personal characteristics in order to meet specific job requirements. Characteristics having varying importance are possibly considered by some contractors and additional characteristics mentioned by contractors are probably considered in addition to the basic characteristics. This would be true for different type contractors and different size companies (see Tables 3-2 to 3-13 and 3-15).

It is significant that these personal characteristics fall into three groups. Common characteristics considered and those given little or no importance would be readily identified by contractors. Characteristics having varying importance are of special interest. In considering them, contractors indicated their relative importance but not that they are actually considered when selecting foremen. Furthermore, very few contractors listed additional personal characteristics. The implication is most contractors have not given much thought to personal characteristics desirable in foremen.

The reason this matter has been given little thought may be due to seasonality in the construction industry. Foremen often move from contractor to contractor and sometimes return to work as journeymen in order to work steadily. Because work depends upon seasons of the year, employment periods are frequently of short duration.

The relative importance of additional personal characteristics mentioned by some contractors in relation to the original list cannot be accurately determined. Of these characteristics,

loyalty is of particular interest. An individual who is loyal to his company is most certainly desirable. However, loyalty poses a dilemma for the construction foreman. As a union member, his loyalty is often divided, at best, between his union and the company for whom he works. Comments from contractors emphasized the problem of divided loyalty.

A majority of contractors indicated the use of an establishment procedure for selecting foremen. However, a significant number of contractors do not use an established procedure, particularly small and medium size companies. Of procedures used in selection, field observation and personal interview are employed most often. Some companies select foremen on the basis of union recommendation. This occurs when companies work in different states and local union restrictions prohibit import of workers.

Four to five years experience is desirable by most contractors when selecting foremen. However, many contractors indicated that experience depends entirely on the individual and the complexity of the job.

Contractors indicated several reasons why workers do not want to become foremen. Not wanting the responsibility is the reason given most often. It is apparent that a large number of workers do not want to become foremen.

Results of this study indicate that most contractors have a conceptual sketch of the construction foreman, but few contractors have developed a comprehensive profile of him. From this and the fact that many contractors have no formal method for

selecting foremen, it becomes evident that in many cases selection is a "hit or miss" proposition.

Considering that thought has been given to only a few important characteristics in foremen, that a significant number of contractors have no formal selection procedure and the large number of workers who do not want to become foremen, it is recommended that contractors review foremen selection methods used by their companies. This review should involve all people who participate in the selection process. Desirable personal characteristics should be identified and selection procedures employed which will match individual talent with job requirements. It is suggested that selection criteria and procedures be written down and monitored to evaluate their effectiveness.

Training For New Foremen

A majority of contractors provide some form of indoctrination training for new foremen. This training ranges from informal briefings to formal training periods and supervisors manuals. A significant number of contractors provide no indoctrination training for new foremen, indicating that many foremen are put out on the job in a "sink or swim" environment. It is recommended that some form of indoctrination training be provided to new foremen. What the company expects from him and what he can expect from the company should be clearly defined. Policies and procedures should be discussed and a brief rundown on project organization should be given. To assist in this indoctrination, a written outline should be developed for the indoctrinator so that important matters will not be overlooked.

A majority of general and mechanical contractors indicated that a training program for new foremen would be valuable, while a majority of electrical contractors indicated that it would not be valuable. Several contractors commented that foremen learn through experience and cannot be trained to be supervisors.

Contractors indicated the relative value of topics for training foremen. On an overall basis, general, electrical and mechanical contractors are in agreement on the relative value of most topics. However, there is some variation in importance among different size companies. For example, small general contracting companies gave greater importance to quality control than did most other contractors. Where variations in relative importance are evident, it is an indication of the differing role of the foremen with different size companies. Therefore a training program must have some flexibility in order to meet specific requirements of different size companies.

Labor relations may be of questionable value as most contractors indicated it was of little importance. Since most foremen are union members this could be a sensitive subject. However, the foreman is under pressure from both management and the union in the conduct of his job. This can be a problem for him and is a matter that should be addressed in a training program. The six remaining topics all have merit, however, the emphasis must be on the specific topics that will meet the various needs of participating foremen.

It is recommended that a training program for foremen be developed. Flexibility should be an integral element of the program in order to meet the varying needs of foremen. It will be

necessary to determine what the costs would be, who will assume them, and when the program should be conducted. The extent of on-the-job training provided by companies should be determined to avoid duplication of effort. Input from experienced foremen should be obtained in order to identify realistic problems to be addressed. Pooling of different size contractors would be advisable so that costs would be more equitable.

Finally, companies should consider developing a long term training plan for foremen. This would include, on the job training as lead men, a short foremen training program, and continuous training which involves monitoring and counseling. The emphasis should be on assisting the foreman in realizing his full potential. This will benefit him and his company.

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APPENDIX A

SURVEY QUESTIONNAIRE

1. Contracting Business:

General _____. Mechanical _____. Electrical _____.

Please indicate specialty: _____

2. Average number of employees during the year:

(25 or less) _____. (26 to 50) _____. (51 to 100 _____.

(100 to 150) _____. (151 to 200) _____.

3. For individual completing the questionnaire, please indicate your position in the company:

Owner _____. President _____. General Superintendent _____.

Superintendent _____. Other (Please Indicate) _____.

4. The following list contains personal characteristics that might be considered when evaluating an individual for the position of foreman. Please rank in order of importance to you (1,2,3,4,5,6, etc.):

<u>Characteristic</u>	<u>Rank</u>
Adaptability (Ability to adjust to new or changed circumstances)	_____
Character (Personal behavior, integrity)	_____
Cooperation (Ability to work with others for a common purpose)	_____
Decisiveness (Showing determination or firmness)	_____
Education (High school, Technical school, etc.)	_____
Experience (Number of years working in his trade)	_____

<u>Characteristic</u>	<u>Rank</u>
Human Relations (Ability to get along with workers and supervisors)	_____
Imagination (Resourcefulness in dealing with new or unusual experience)	_____
Industry (Energy applied in performing his work)	_____
Initiative (A self-starter)	_____
Intelligence (Ability to learn or understand from experience and to acquire and retain knowledge)	_____
Judgement (Ability to develop correct and logical conclusions)	_____
Personal Appearance (Physical, neatness, etc.)	_____
Reliability (Can be counted upon to do what is expected of him)	_____
Self-Confidence (Belief in one's own abilities)	_____
Self-Expression (Oral)	_____
Self-Expression (Written)	_____
Technical Skill (Knowledge of his trade)	_____
Others (Please indicate) _____	_____
_____	_____

5. Does your company have an established procedure for selecting foremen?

Yes _____

No _____

If yes, please indicate procedure below:

Personal Interview _____

Field Observation _____

Years with Company _____

Probationary Period _____

Recommendation _____

Other (Please indicate) _____

6. Have you encountered individuals who have no desire to ever become foremen? Yes _____ No _____

If yes, indicate individual's reasons, if known: _____

7. How many years of experience do you think an individual should have before he is ready to become a foreman? _____ YRS

8. Does your company provide indoctrination training for newly-selected foremen? This would include a briefing on company policies, operating procedures, organization, etc.

Yes _____ No _____

If yes, please describe briefly _____

9. Do you feel that a training program would be valuable for newly-selected foremen? Yes _____ No _____

10. In the list below, please rank (1,2,3,4,5, etc.) in order of importance to you the areas which you feel would be valuable for training newly-selected foremen.

Supervisory Training (Working with and supervising people) _____

Work Scheduling (Planning, CPM, Bar Charts, etc.) _____

Construction Methods and Productivity Improvement _____

Cost and Labor Reporting _____

Labor Relations _____

Quality Control _____

Safety _____

11. Comments (Any additional comments that you have on the selection and training of newly-selected foremen will be greatly appreciated)

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K3826

Kennedy

Selection and training of construction foremen in the Puget Sound area, Washington.

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Thesis
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Kennedy

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